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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/932,791 | 08/17/2001 | Mark E. Patton | BW-DKT01010 | 5440 |
| 32175 | 7590 | 11/07/2003 | EXAMINER | |
| BORGWARNER INC. POWERTRAIN TECHNICAL CENTER 3800 AUTOMATION AVENUE, SUITE 100 AUBURN HILLS, MI 48326-1782 | | | PAIK, STEVE S | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2876 | |

DATE MAILED: 11/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/932,791 | PATTON, MARK E. | |
| | Examiner | Art Unit | |
| | Steven S. Paik | 2876 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-17, 19-25, 27 and 29 is/are rejected.
- 7) ☒ Claim(s) 13, 18, 26, 28 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>9/8/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 08, 2003 has been entered.

Response to Amendment

2. Receipt is acknowledged of the Amendment filed September 08, 2003. Claims 1, 4, 6, 9, 10, 12, 16, 20, 21, and 22, were amended in the Amendment.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on September 8, 2003 includes a U.S. Patent with possibly a transposed patent number. The correct patent number appears to be U.S. Patent No. 6,382,512. The examiner corrected the number and initialed the PTO form -- 1449.

Claim Objections

4. Claim 17 is objected to because of the following informalities: the recited limitation, "the reader" lacks antecedent basis. The examiner respectfully suggests amending it by -- the scanning engine --. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 5, 9-12, 14-17, 19, 20, 24, 27, and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Ahmed et al. (US 5,602,885).

Re claims 1, 9, and 14-17, Ahmed discloses a method for inspecting a workpiece comprising a plurality of parts (tube with girth weld 30; col. 4, ll. 13-17), comprising the steps of:

- a) moving the workpiece (26) relative to a scanning engine (line scan camera 62 illuminates the workpiece);
- b) detecting a line image across the workpiece with the scanning engine (col. 5, ll. 26-29) producing a signal output representative of the line image (col. 5, ll. 30-44);
- c) deriving a processed signal (by a digitizer 72) from the signal output of the scanning engine (col. 4, lines 41-42);
- d) comparing the processed signal to a reference (a maximum and minimum reflectance standard; col. 6, ll. 26-39) representing a workpiece without missing parts (col. 4, lines 55+);
- e) indicating if the processed signal does not match the reference (col. 7, ll. 29-51).

Re claim 5, Ahmed discloses that the each scanning portion is equivalent to one full revolution and the scanning rate can be modified in accordance with a user's decision. Based on the scanning rate, a matrix of reflectance data is collected for later comparison with a maximum and minimum reflectance standard.

Regarding claims 10-12, and 27, Ahmed discloses the method as discussed in rejected claim 1 stated above, in which the step of deriving a processed signal comprises converting the

signal output of the barcode reader into a number (numeric reflectance values of rows of pixels, the converted numbers are compared with a standard reflectance value; col. 3, ll. 28-40.).

Re claims 19, 20, 24, and 29, Ahmed discloses a method for inspecting a workpiece comprising a plurality of parts (tube with girth weld 30; col. 4, ll. 13-17), comprising the steps of:

- a) a light source (64) for illuminating the workpiece (26);
- b) a light sensitive array for detecting a line image of the workpiece, produced by said light source, having a signal output representative of the detected line image (Fig. 3 and 4); and
- c) a signal processing circuit (processor) having an input coupled to the signal output of the light sensitive array (pixel array), and an output, such that the signal output of the light sensitive array is compared to a reference signal (a maximum and minimum reflectance standard; col. 6, ll. 26-39) representative of a complete workpiece without missing parts, and the output of the signal processing circuit producing a signal when the comparison indicates a part is missing (accept/reject signal).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 3, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed et al. (US 5,602,885) in view of Ledvina et al. (US 4,509,323).

Ahmed reference discloses an optical scanning engine to inspect a defective or missing part in a workpiece. The reference further discloses that the optical scanning engine scans the workpiece and a signal from the scanning engine is processed to be compared with a standard reflection data.

However, Ahmed does not show a parallel-link chain in a container.

Ledvina et al. discloses a parallel-link chain (Fig. 2) having two types of links with a distinguishable physical characteristic from each other. He discloses the links are painted with different colors (selecting colors are designers choice but it would be obvious to select colors distinctive to each other. One of ordinary skills in the art preferably selects a dark color such as black to minimize noise in detecting a reflected light.) and illuminated by a light. An optical detector detects the reflected light and examines for the appropriate color spectrum. Then the link type is verified (page 3-4, (6) of the description of the preferred embodiments).

In view of Ledvina, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to further substitute the workpiece of Ahmed with a parallel-link chain of Ledvina since both are scanned by an optical scanning engine. Whether the optical scanning engine scans a workpiece (26) or a parallel-link chain, the scanning engine provides the same fundamental functions of scanning a piece of material for identifying a defective or missing part in a workpiece. Furthermore, such modification of substituting a workpiece of Ahmed with a parallel-link chain would have been an obvious matter of user preference, and therefore an obvious expedient.

9. Claims 4, 6-8, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed et al. (US 5,602,885) in view of Marwin (US 5,280,162).

Ahmed reference discloses an optical scanning engine to inspect a defective or missing part in a workpiece. The reference further discloses that the optical scanning engine scans the workpiece and a signal from the scanning engine is processed to be compared with a standard reflection data.

However, Ahmed does not explicitly show the deriving step further comprising the steps of amplifying an output from the scanning engine and filtering the amplified output.

Marwin discloses a laser scanner comprising a light source, a photodetector, an amplifier, a filter, digitizer, and a processor (Fig. 1). As shown in FIG. 1, photodetector (12) and analog amplifier/filters (14) comprise a part of the light receiving circuitry. The analog amplifier/filter (14) pass band is such that it rejects any noise components at the lower ambient light frequencies. When the laser scanning system (10) is in the scanning mode, laser light is reflected off a bar code and is received by photodetector (12) and amplified and filtered by the analog amplifier/filter circuitry (14). The resulting signal (21) is then digitized by hardware digitizer (16) and subsequently decoded by microprocessor (24) and a bar code decoder (not shown). The scanner is capable of reading a scannable indicia on any pieces or parts that include a barcode symbol.

Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to further incorporate the amplifier and a filter, as taught by Marwin, to the teachings of Ahmed for the purpose of decoding a bar-coded symbol in a more precise manner. Although Ahmed does not specifically disclose an amplifier and a filter as a part of scanning system, it may include such elements within the system. Otherwise, such modification of incorporating an amplifier and a filter between a photodetector and a digitizer would have

been an obvious matter of design variation, well within the ordinary skill in the art, and therefore an obvious expedient.

Allowable Subject Matter

10. Claims 13, 18, 26, 28, and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the cited prior arts of record do not show the claimed method and a system for detecting a missing part of a workpiece comprising, among other things, a binary number in which each bit representing a detection or non-detection part and the workpiece being moved in a start-stop motion relative to a reader and the line image is detected while the workpiece is stationary. The missing part detecting system further comprises a light source that is located behind the workpiece, such that the light from the light source silhouettes the workpiece, and the line image is detected by light blocked by parts or passed where there are not parts. Furthermore, the method includes a signal processing circuit utilizing mathematical integration of an output signal from a light sensitive array and calculating an area under a measured output curve, and the reference being a voltage.

Response to Arguments

11. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

The examiner updated prior art search and applied a new prior art which discloses, teaches, or fairly suggests the claimed invention as discussed above. Accordingly, claims 1-12, 14-17, 19-25, 27 and 29 are rejected under 35 U.S.C. § 102 (b) or 103 (a).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven S. Paik whose telephone number is 703-308-6190. The examiner can normally be reached on Mon - Fri (5:30am-2:00pm).

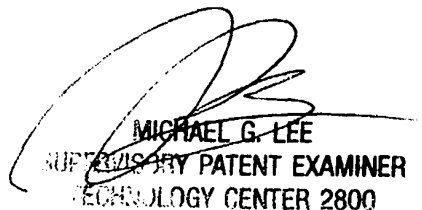
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee can be reached on 703-305-3503. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.

Steven Paik

Steven S. Paik
Examiner
Art Unit 2876

ssp
October 21, 2003


MICHAEL G. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800